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Approximation of Variational Eigenvalue Problems

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Abstract

A variational eigenvalue problem in an infinite-dimensional Hilbert space is approximated by a problem in a finite-dimensional subspace. We analyze the convergence and accuracy of the approximate solutions. The general results are illustrated by a scheme of the finite element method with numerical integration for a one-dimensional second-order differential eigenvalue problem. For this approximation, we obtain optimal estimates for the accuracy of the approximate solutions. © 2010 Pleiades Publishing, Ltd.

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